P. L. WILBUR.

AIR OPERATED FIRE EXTINGUISHER.

APPLICATION FILED MAR. 30, 1909.

951,625.

Patented Mar. 8, 1910.

3 SHEETS—SHEET 1.

Fig. 1.

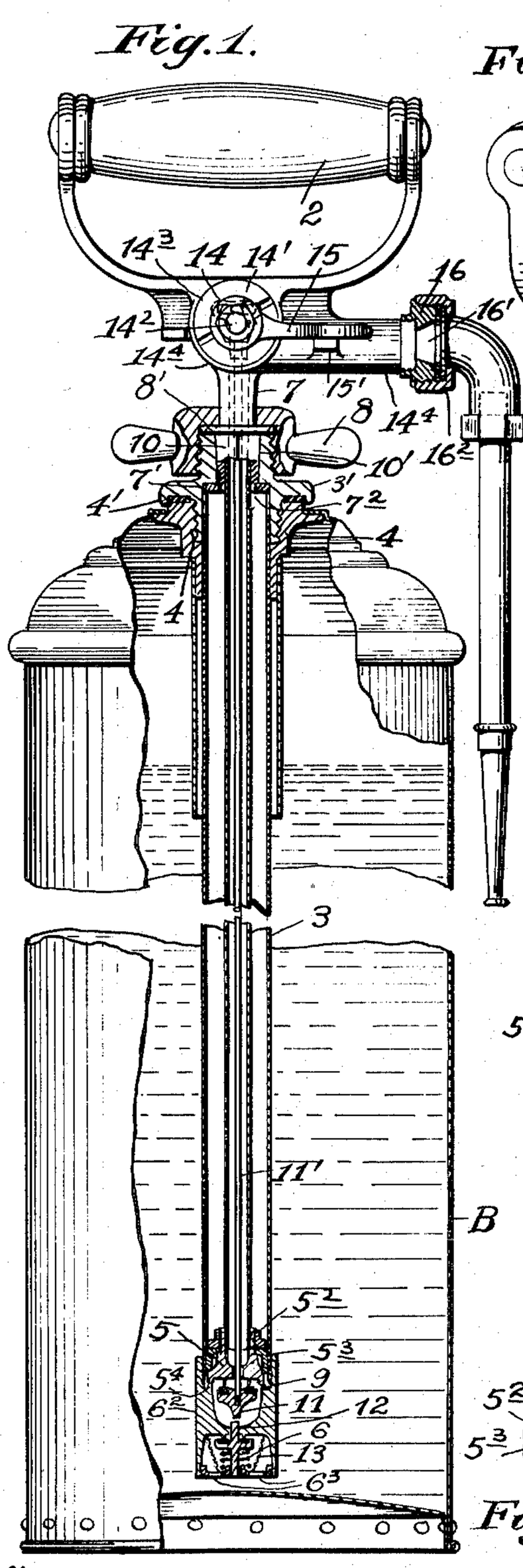

Fig. 5.

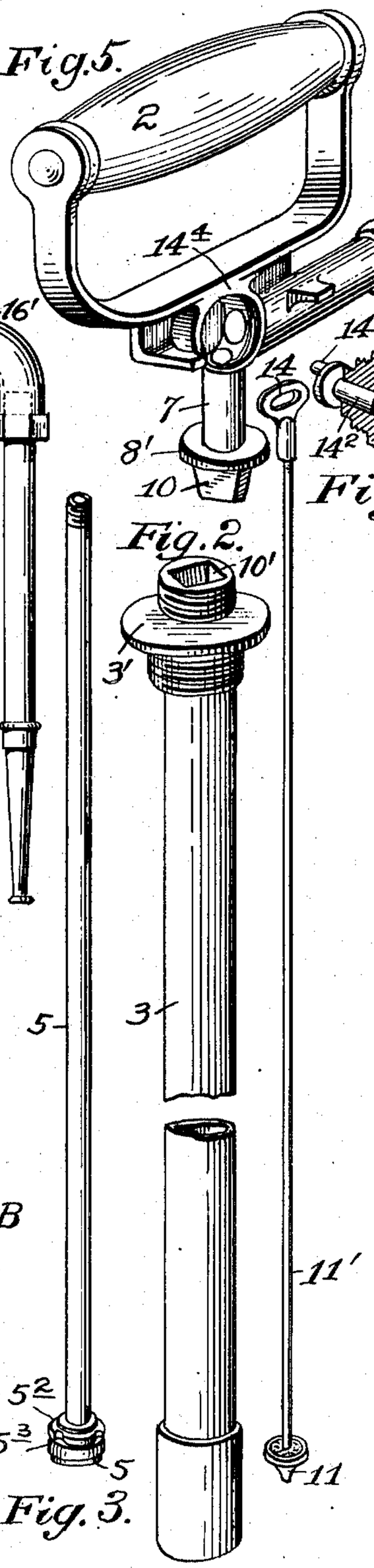

Fig. 4.

Fig. 6.

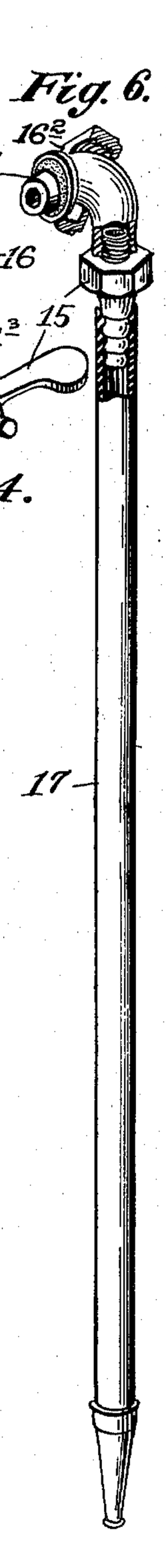

Fig. 2.

Fig. 3.

Witnesses:

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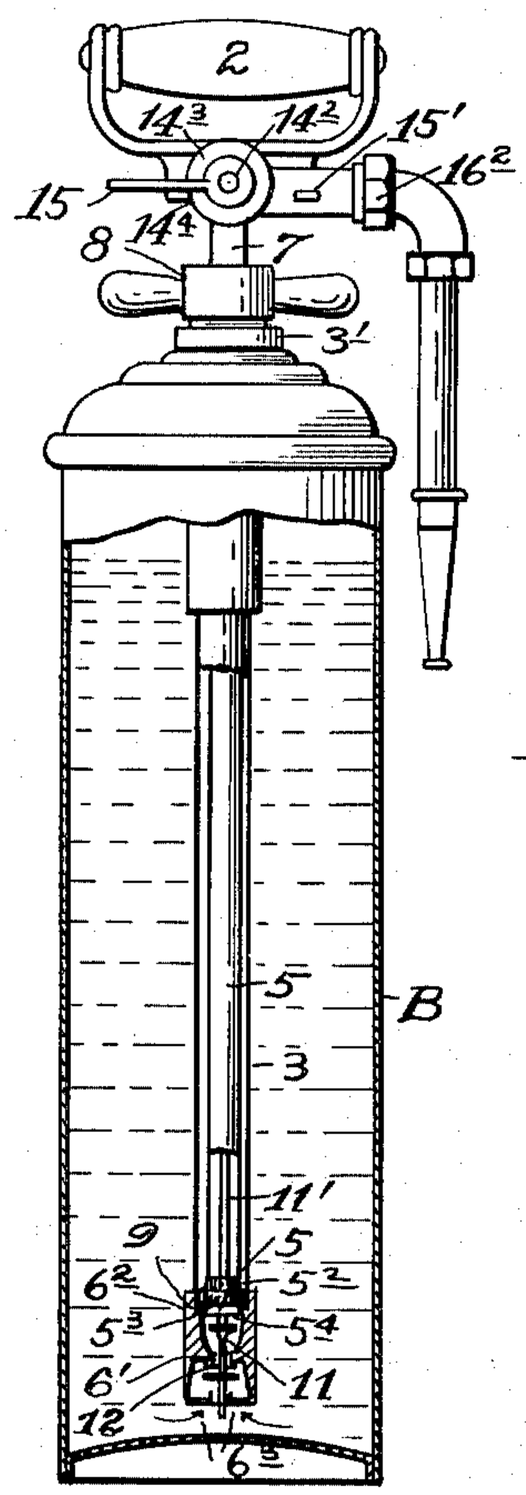


Fig. 7.

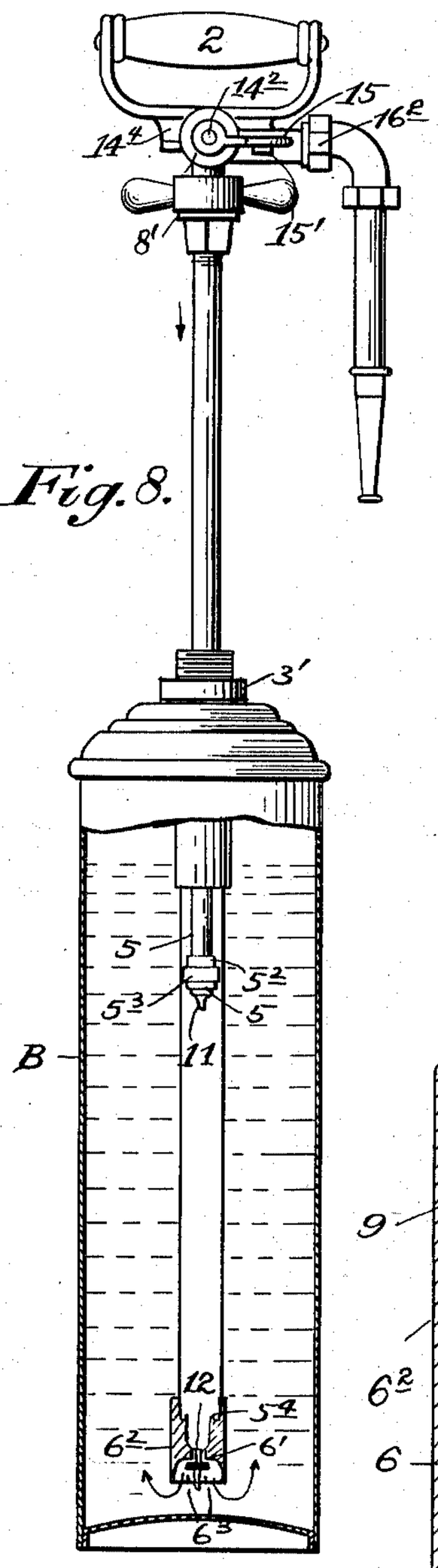
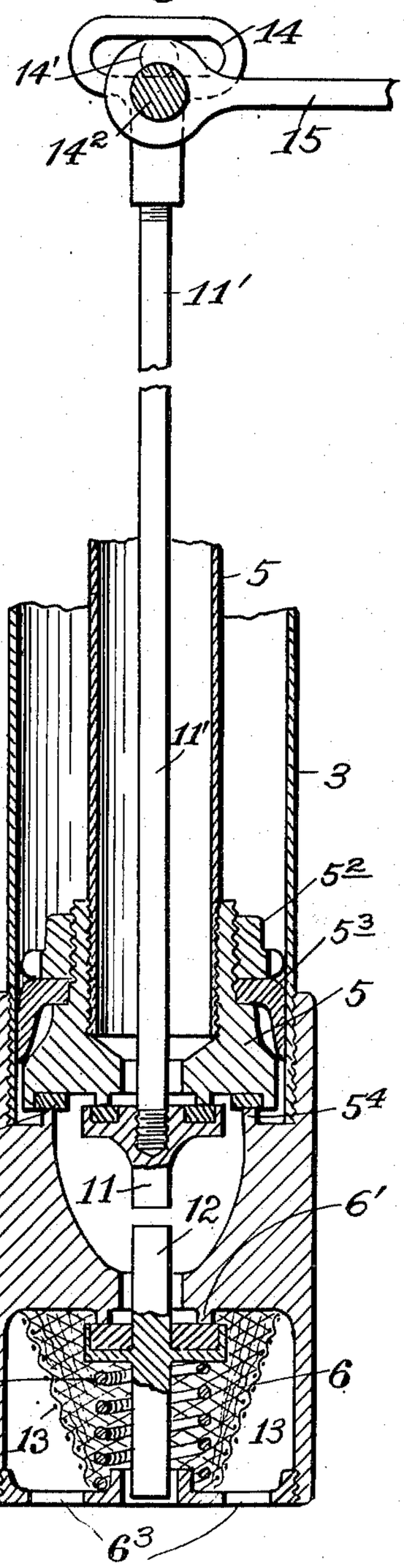


Fig. 8.

Fig. 9.



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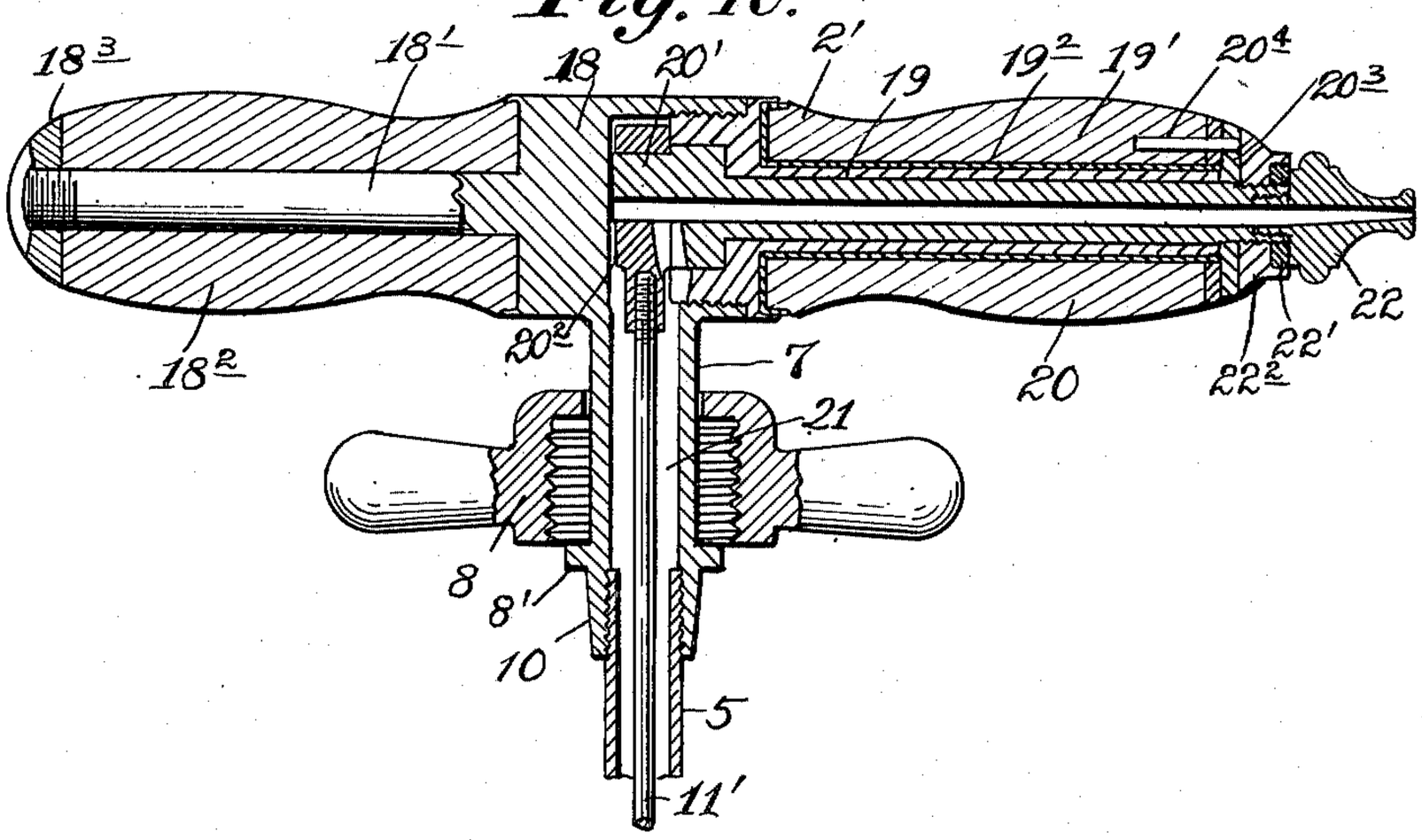
3 SHEETS—SHEET 3.

Fig. 10.



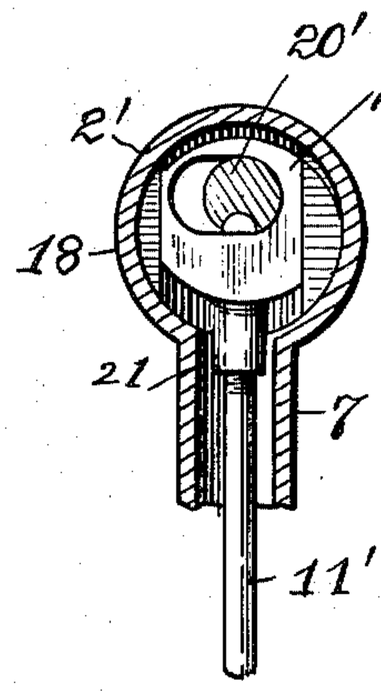


Fig. 11.

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UNITED STATES PATENT OFFICE.

PETER L. WILBUR, OF NEW YORK, N. Y.

AIR-OPERATED FIRE-EXTINGUISHER.

951,625. Specification of Letters Patent. Patented Mar. 8, 1910.

Application filed March 30, 1909. Serial No. 486,787.

To all whom it may concern:

Be it known that I, PETER L. WILBUR, of the borough of Bronx, city and State of New York, have invented a certain new and useful Improvement in Air-Operated Fire-Extinguishers, of which the following is a specification.

The present invention embraces a tank the valve-controlled discharge of a fire extinguishing liquid from which is effected by compressed air forced into the tank by a pump.

It is an object of the present invention to provide a simple construction for the purpose, easily manipulated to charge the tank with air and the discharge of liquid from which may be readily controlled by the fingers of the hand applied to the pump handle.

In the drawings accompanying the present specification Figure 1 is mainly a longitudinal section through an air operated fire extinguisher embodying my invention, part being broken away. Fig. 2 is a perspective of the pump barrel part being broken away. Fig. 3 is a similar view of the hollow piston rod adapted to work therein. Fig. 4 shows a hand-operated valve stem for controlling the liquid discharge, there being also indicated at the right of this figure a sectional perspective of the crank and its mounting for operating this stem. Fig. 5 is a perspective of the pump handle which also serves as a means for handling the tank, the chamber for the mentioned crank being indicated. Fig. 6 is a perspective of the swivel connection to the tank, the flexible discharge hose fastened to the connection being also shown. Fig. 7 is partly an elevation, partly a section on a reduced scale of the tank and its associated parts, the air pump piston rod being in its lowermost position. Fig. 8 shows this rod in an elevated position. Fig. 9 is an enlarged detail of the lower end of the pump barrel and shows the piston and valve construction. Fig. 10 is a sectional detail showing a modified construction of pump handle and discharge control. Fig. 11 is a cross-section of Fig. 10.

Similar characters of reference designate corresponding parts in all figures.

The tank for holding the fire extinguishink liquid may be of any suitable construction and is usually, though not necessarily, made of portable size. In the drawings it is designated by B and is adapted to hold water or other fire extinguishing liquid as indicated, this liquid being subjected to and ejected by the pressure of compressed air in the upper part of the tank. This air is pressed into the tank by an air pump whose plunger or piston is conveniently and as here represented, operated by the handle provided for lifting and carrying the tank. That is to say 2 in Figs. 1 to 9 inclusive and 2′ in Figs. 10 and 11, designate the aforesaid handle, and 3 the compression pump barrel or cylinder secured to a perforated cap 3′ having a threaded connection with a fixture 4 of the can top and forming a tight joint therewith by the compression of a washer 4′ after the filling of the tank and the reinsertion of the pump barrel. Since the outward flow of the liquid from the tank here takes place through the piston rod of the pump, this rod 5 is hollow. At its lower end it is provided with a piston or plunger between which and a follower nut 5^2 a cup shaped washer 5^3 is secured. As disposed in the drawing this washer may collapse somewhat to permit the passage of air past it during the ascent of the piston but it expands against the sides of the pump barrel upon the descent of the piston, forcing the inclosed air past valve seat 5^4 at the lower end of the pump barrel, when the tension of the air is sufficient to overcome the tension of the closing spring of the inwardly closing or check valve 6′ mounted in valve casing 6^2 at the lower end of the pump barrel, the air ultimately passing through openings 6^3 in the casing into the interior of the tank.

As already stated the issuing liquid passes upward through hollow piston rod 5 and out through a part rigid with the handle, its passage being controlled by a valve readily manipulated by the fingers of the hand grasping the tank-pump-handle. In both the constructions set forth in Figs. 1 to 9 inclusive and in Figs. 10 and 11, the piston rod is secured to a hollow extension 7 of the handle and is guided by a guide plate 7′ having cut away portions 7^2 for the inlet of air during the pumping operation.

In order to hold the handle in fixed and firm relation to the tank when the pump is not being worked a threaded coupling 8 is indicated adapted to impinge against a collar 8′ on extension 7 and engage with the threaded exterior of cap 3′. When screwed to place valve 9 on piston 5 is forced against its seat 5^4 and, as indicated, the handle is positioned with reference to the tank by the

squared plug end 10 of extension 7 which fits into a corresponding socket 10′ in cap 3′.

The passage of liquid outward through the hollow piston rod is in part controlled by a valve 11 seating upward against the lower face of piston 5 and secured to a valve stem 11′ extending upward through piston rod 5. When this stem is pulled upward passage through the piston rod is shut off. When it is pushed downward it strikes against stem 12 of valve 6′ forcing the latter from its seat against the tension of spring 6. The liquid under the tension of the inclosed air can then pass outward through screen 13.

Referring now to the means disclosed in Figs. 1 to 9, inclusive, for operating valve stem 11′, at its upper end the stem is provided with a slotted yoke, see 14, by means of which the stem is hung from a crank pin 14′ on a rock shaft 14^2 mounted in a bearing in a threaded plug 14^3 screwed into the side of the hollow tank-pump handle fixture 14^4. A finger piece 15 is secured to this rock shaft in convenient reach of a finger of the hand grasping handle 2. A stop 15′ is also indicated. Fixture 14^4 terminates in a conical socket 16 in which a fitting 16′ may be swiveled by a coupling 16^2 this fitting having provision for the attachment of a nozzle-ended flexible hose 17.

According to the construction set forth in Figs. 10 and 11, handle 2′ is likewise provided with a hollow extension 7 to which hollow piston rod 5 is secured and associated with shoulder 8′ on such extension is a coupling member 8 as before. Extension 7 here extends from a central body part 18 to a rod like extension 18′ of which a grip 18^2 is secured by a nut 18^3. The opposite side of the body part is recessed and with the threaded wall of this recess engages a tubular part 19 on which is rotatably mounted a grip 19′ this latter being shown with a metallic lining 19^2. Within tubular part 19 is mounted a tubular shaft 20 having at one end a crank pin 20′ extending through the opening in a slotted cross head or yoke 20^2 secured to the valve stem 11′ already described. At its opposite end tubular shaft 20 has affixed to it a disk 20^3 from which a pin 20^4 extends; this pin enters grip 19′ which, therefore, when turned rotates shaft 20 and hence actuates stem 11′ through the aforesaid crank pin and cross head connection. The actuation of this stem serves to control the outflow of the tank liquid in the manner referred to, the issuing liquid passing upward through the hollow piston rod, through port 21, the bore of shaft 20 and outward through a fitting 22 (for the attachment of a flexible hose not shown) pressed against packing 22′ in a retaining nut 22^2.

Having described my invention, I claim:

1. A fire extinguisher comprising in combination a tank, a compression air pump barrel extending thereinto, a hollow piston rod, a check valve associated with said barrel for holding the pressure in the tank, a piston, a valve mounted in said piston for closing off discharge through the hollow piston rod and means for mechanically forcing said valves from their seats and thereby permit a discharge of the liquid through the hollow piston rod.

2. In a fire extinguisher, the combination of a tank, an air pump barrel extending thereinto, a check valve associated with said barrel, a piston working in said barrel, a hollow piston rod, a pressure holding valve mounted on said piston in close proximity to said first mentioned valve when the piston is depressed, a valve stem secured to the second mentioned valve and extending through said hollow piston rod, and means for actuating said stem and thereby said valves to permit an outflow.

3. In a fire extinguisher the combination of a tank, a compression air pump barrel secured thereto, a piston and hollow piston rod working in said barrel, a handle secured to said piston rod, means for detachably securing the piston rod rigidly to the tank, valves associated with said piston and barrel for permitting air to be forced into and held in the tank, and means for forcing said valves from their seats against the tank pressure for the purpose specified.

4. In a fire extinguisher, the combination of a tank, an air pump barrel removably secured in said tank, a check valve at the bottom of the barrel, a valve-provided piston, a hollow piston rod, a handle secured to said piston rod, a coupling for rigidly connecting the piston rod to the tank, a valve stem extending through the hollow piston rod, means for actuating said valve stem, a hollow part movable with the handle whose bore communicates with the bore of said piston rod, and a flexible hose connected to said part.

5. In a fire extinguisher the combination of a tank, a compression air pump having a barrel and a hollow piston rod, a piston, a check valve at the bottom of the barrel, a valve in said piston, the opening of the latter valve serving by contact to open said check valve, a valve stem extending from the valve in said piston to the tank exterior, and a hollow part movable with said piston rod, and whose bore communicates with the bore of said hollow piston rod.

In witness whereof I have signed this specification in the presence of two subscribing witnesses.

PETER L. WILBUR.

Witnesses:
PIERSON L. WELLS,
WILLIAM E. GOWDEY.